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Customer No.: **07278**	Docket No: **21058/0206675-US0**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Mineo Yamakawa et al.

Serial No.: 10/750,141	Art Unit: 1754

Confirmation No.: 7926

Filed: December 31, 2003	Examiner: Daniel McCracken

For: METHODS OF PRODUCING CARBON NANOTUBES USING PEPTIDE OR NUCLEIC ACID MICROPATTERNING

DECLARATION OF KAI WU, PH.D. PURSUANT TO 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I, Kai Wu, hereby declare as follows:

1. I am a citizen of the United States and over 21 years of age. I received a Bachelors of Arts degree in Chemistry in 1983 from New York University and a Ph.D. degree in Cell Biology and Genetics in 1990 from Cornell University. I am not an inventor on the present application but I am an employee of Intel Corporation, which is the assignee of the present application. A copy of my curriculum vitae is attached as Exhibit A.

2. I have worked for over 17 years as a research scientist in the biotech and computer industry, have published 11 articles, have presented 3 posters, and have been an invited lecturer on 2 occasions. I am an inventor or co-inventor on 4 patents and 5 patent applications.

3. I have reviewed the file history of application serial number 10/750,141 (i.e., the present application or "the '141 application"), including the specification of the present application, the pending and amended claims (in the accompanying Amendment) in the present application, and the Office Action mailed May 17, 2007; and I make this declaration in support of the present application.

4. I understand that claims 1-6, 8-9, 11, and 15-21, and 39-41 of the '141 application are directed to a method for producing patterned arrays of carbon nanotubes on a substrate, wherein the distribution of the nanotubes is controlled by the prior attachment of catalyst nanoparticles to the substrate, and wherein the catalyst nanoparticles are directed to the substrate by way of their attachment to biomolecules which are aligned with the substrate to deposit the nanoparticles in a non-random fashion.

5. In my opinion, the subject matter of the specification and the pending and amended claims (in the accompanying Amendment) of the present application pertains to the arts of biotechnology and materials science. A person of ordinary skill in these arts as of December 31, 2003 would have been a person with: (a) a Bachelor's degree in chemistry with a specialty in biochemistry or materials science and/or 1-2 years of experience in a biotechnology field; (b) a Master's degree in chemistry, biochemistry or materials science with 0-1 years of experience in a biotechnology field; or (c) a Ph.D. in chemistry with a specialty in biochemistry or materials science.

6. It is my opinion that, upon reading the specification of the '141 application, a person of ordinary skill in the art would understand that the inventors were in possession of the claimed methods for producing patterned arrays of carbon nanotubes through the controlled attachment of catalyst nanoparticles to a substrate, wherein the nanoparticles are attached to the substrate in a non-random fashion using biomolecule-directed placement techniques; and that the information set forth in the specification of the '141 application would enable a person of ordinary skill in the art to make and use such compositions.

7. It is also my opinion that (1) the growth of carbon nanotubes on a substrate using catalyst nanoparticles, (2) molecular alignment with and/or attachment of biomolecules to a substrate, and (3) attachment of e.g., proteins containing metal ions (e.g., ferritin) to biomolecules, and (4) conversion of these proteins to metal oxides with, for example, high temperature calcination techniques are all a matter of routine biochemistry or materials science as disclosed in the specification through citations to patents and literature references (*infra)*. The basis for this opinion is set forth below.

Attaching Catalyst Nanoparticles to Selected Locations on a Biomolecule with Defined Spacing Between the Nanoparticles

8. The specification of the '141 application discloses a number of methods for attaching catalyst nanoparticles to proteins, nucleic acids and other polymers so that there is a defined spacing between the nanoparticles. Specification at para. [0026], lines 1-4 ("The attachment site for catalyst nanoparticles ... on individual polymer molecules can be determined. For example, streptavidin modification of specific amino acid residues on a protein or peptide can be used to bind biotinylated ferritin to selected sites on the three-dimensional protein or peptide." emphasis added) and para. [0026], lines 5-7 ("Alternatively, streptavidin hybridized

oligonucleotide ... probes can be used to hybridize to <u>selected locations</u> on a single stranded DNA molecule ..., followed by binding of biotinylated ferritin." emphasis added). A person of ordinary skill in the art would understand that binding of catalyst nanoparticles such as ferritin at selected locations on a protein, peptide, or oligonucleotide would lead to nanoparticles bound with a defined spacing. In my opinion, one of ordinary skill in the art would understand based on, for example the above referenced disclosure, that the applicants were in possession of methods for attaching catalyst nanoparticles to biomolecules with a defined spacing between the nanoparticles.

9. The specification of the '141 application also discloses a number of techniques that can be used to bind the nanoparticles to the biomolecules. For example, specification at para. [0026], lines 9-12 ("[P]eptides ... and nucleic acids ... can be chemically synthesized, incorporating modified amino acids ... or modified nucleotides into the growing polymer ... at predetermined locations within the polymer ... sequence. The modified amino acid or nucleotide residues can then be used to attach catalyst nanoparticles ... to specific locations on the polymer.") The specification also teaches a number of alternative techniques that can be used for nanoparticle attachment, such as using amino acid analogues, and modification of specific amino acid residues (e.g., cysteine or lysine) post synthesis. In my opinion, based on my experience in biochemistry and materials science and the high level of skill in these arts, one of ordinary skill would know how to attach catalyst nanoparticles to biomolecules with a defined spacing between the nanoparticles.. As taught in the specification, the modification of biomolecules at, e.g., specific amino acid and/or nucleotide sites, and the attachment of nanoparticles, e.g., protein-based nanoparticles such as biotinylated ferritin to these specific sites was well known in the prior art. Furthermore, the specification provides considerable direction and guidance for how to

apply these well known techniques to the presently claimed invention (*See* e.g., specification at paras. [0026]-[0028] and [0074]). Thus, the attachment of catalyst nanoparticles to biomolecules with a defined spacing between the nanoparticles would not involve undue experimentation.

Aligning the Biomolecule with a Substrate so that the Catalyst Nanoparticles are Aligned with the Substrate in a Non-Random Fashion

10. The specification of the '141 application discloses a number of methods for aligning a biomolecule with a substrate to further align the catalyst nanoparticles with the substrate in a non-random fashion. Specification at para. [0042], lines 1-4 ("The method of polymer alignment used is not limiting and any known method, including ... optical tweezers, DC and/or AC electrical fields, microfluidic flow, and/or magnetic fields applied to attached ferromagnetic nanoparticles ... is contemplated.") Specification at para. [0041], lines 1-3. (The attached nucleic acids ... can be aligned using a number of well known techniques. An exemplary method for aligning nucleic acids ... on a substrate is known a molecular combing.") *See* also, para [0075], lines 1-3 for protein alignment techniques. In my opinion, one of ordinary skill in the art would understand based on, for example the above referenced disclosure, that the applicants were in possession of methods for aligning biomolecules with a substrate, which would align catalyst nanoparticles with the same substrate in a non-random fashion.

11. The specification cites a number of references that describe the application of these alignment techniques to biomolecules. These techniques are routine in the art of biochemistry and materials science. Furthermore, the specification teaches a new method for aligning nucleic acids comprising attaching, for example, DNA to a molecular wire and aligning the molecular wire with a substrate (*See* para. [0044]-[0048], and Figure 4). In my opinion, based on my experience in biochemistry and materials science and the high level of skill in these arts,

one of ordinary skill would know how to align biomolecules containing bound catalyst nanoparticles with a substrate. Specifically, the specification provides considerable guidance for how to align biomolecules for use in the presently claimed methods, and the specification directs one of skill in the art to well known techniques in the literature for particular examples of bimolecular alignment (*See* e.g., specification at para. [0025]). Thus, the alignment of biomolecules with a substrate such that the catalyst nanoparticles are aligned with the substrate in a non-random fashion would not involve undue experimentation.

Attaching the Biomolecules to the Substrate

12. The specification of the '141 application discloses a number of methods for attaching a biomolecule with a substrate. Specification at para. [0035], lines 1-6, ("In various embodiments, nucleic acid molecules ... can be immobilized by attachment to a solid surface ... [using] a variety of known methods involving either non-covalent or covalent attachment. For example, immobilization can be achieved by coating a solid surface with streptavidin or avidin ... and binding of [a] biotin ... conjugated nucleic acid.") and at para [0075], lines 3-6 ("Proteins ... can be attached to substrates using standard techniques, such as silanization and activation via carbodiimide or glutaraldehyde."). In my opinion, one of ordinary skill in the art would understand based on, for example the above referenced disclosure, that the applicants were in possession of methods for attaching biomolecules to a substrate.

13. The specification cites a number of references that describe the application of these attachment techniques to biomolecules, (*See*, e.g., para. [0075]) or describes the attachment with a sufficient description to enable one of skill in the art to attach the biomolecules to a substrate (*See*, e.g., para. [0035] - [0039]). These techniques are routine in the art of biochemistry and materials science. In my opinion, based on my experience in biochemistry and

materials science and the high level of skill in these arts, one of ordinary skill would know how to attach biomolecules to a substrate. Specifically, the specification provides considerable guidance for how to attach biomolecules to a substrate for use in the presently claimed methods, and the specification directs one of skill in the art to well known techniques in the literature for particular examples of biomolecule attachment (*See* e.g., specification, e.g., at para. [0075]). Thus, the attachment of biomolecules to a substrate would not involve undue experimentation.

<u>Removing the Biomolecules such that the Nanoparticles Attach to the Substrate at a Biomolecule Directed Site</u>

14. The specification of the '141 application discloses a techniques for removing biomolecules from the substrate. Specification at para. [0021], lines 7-8. ("Before nanotube production, the polymer molecules can be removed, for example by heating to about 600 to 800 °C in air or oxygen"). Furthermore, heat treatment of the attached polymer molecules can be used to convert, e.g., biomolecule-bound iron containing proteins to discrete iron oxide nanoparticles suitable for catalytic growth of single-walled carbon nanotubes (*See* specification at para. [0028], lines 1-10). This treatment to remove the biomolecule would result in the deposition of the catalyst nanoparticle on the substrate and, if desired, the carbon nanotubes can be grown directly from the deposited catalyst nanoparticles in the same reaction chamber. In my opinion, one of ordinary skill in the art would understand based on, for example the above referenced disclosure, that the applicants were in possession of methods for removing biomolecules such that catalyst nanoparticles attach to the substrate at a biomolecule-directed site.

15. The specification cites references that describe how to convert, e.g., iron containing proteins to catalyst nanoparticles suitable for catalytic growth of single-walled carbon

nanotubes (*See* specification at para. [0028], lines 1-10), and, as discussed above, the specification teaches that these techniques can be used both to remove the biopolymer, and to direct these catalyst nanoparticles to the substrate. Biopolymer removal techniques and catalyst nanoparticle synthetic techniques using, e.g., high temperatures are routine in the skill of biochemistry and materials science, and the use of high temperatures to simultaneously remove the biomolecule and deposit the catalyst nanoparticle a substrate is described and enabled in the specification. In my opinion, based on my experience in biochemistry and materials science and the high level of skill in these arts, one of ordinary skill in the art would know how to remove biomolecules such that the nanoparticles attach to the substrate at a biomolecule directed site. Specifically, the specification provides considerable guidance for how to remove biomolecules from a substrate for use in the presently claimed methods. In one example, the methods of biomolecule removal involve no more than decomposing the biomolecule at high temperature, a technique that is clearly routine to one of skill in the art. Thus, removing biomolecules such that the nanoparticles attach to the substrate at a biomolecule directed site would not involve undue experimentation.

Producing Substrate Attached Carbon Nanotubes on the Catalyst Nanoparticle With Non-Random Distribution of the Nanotubes.

16. The specification of the '141 application discloses a number of techniques for producing substrate attached carbon nanotubes from catalyst nanoparticles that are bound to a substrate. Specification at para. [0022], lines 1-9, ("Methods for carbon nanotube formation using catalyst nanoparticles ... such as ferritin are known. ... Typically, catalyst nanoparticles ... are used in combination with ... CVD techniques ... . The catalyst nanoparticles ... serve as nucleation sites for carbon nanotube growth and formation.") and at para [0024], lines 1-4

("Such techniques have been used to produce arrays of carbon nanotubes attached to a substrate ... wherein the areas ... in which nanotubes are formed can be controlled by controlling the distribution of catalyst nanoparticles ... on the substrate." Furthermore, the specification teaches that "because the polymer molecules can be attached to the substrate in an ordered pattern before nanotube synthesis, the resulting nanotubes become attached to the substrate in an ordered pattern, determined by the distribution of the catalyst containing polymer ... molecules on the substrate." (*See* para. [0021], lines 3-7). In my opinion, one of ordinary skill in the art would understand based on, for example the above referenced disclosure, that the applicants were in possession of methods for producing substrate attached carbon nanotubes from catalyst nanoparticles that are bound to a substrate, wherein the distribution of the carbon nanotubes is non-random due to the ordered pattern of the biomolecules prior to nanotube synthesis.

17. The specification cites a number of references that describe how to grow carbon nanotubes from catalyst nanoparticles bound to a substrate (*See,* e.g., specification at para. [0022-0024]). These carbon nanotube growth techniques using, e.g., chemical vapor deposition are routine in the skill of materials science, and their use in conjunction with techniques to deposit catalyst nanoparticles on a substrate at a biomolecule directed site is described and enabled in the specification. In my opinion, based on my experience in biochemistry and materials science and the high level of skill in these arts, one of ordinary skill would known how to produce substrate attached carbon nanotubes on the catalyst nanoparticles with non-random distribution (i.e., due to the biomolecule directed distribution of the catalyst nanoparticles). Specifically, the specification provides considerable guidance for how to synthesize carbon nanotubes from catalyst nanoparticles for use in the presently claimed methods, and the specification directs one of skill in the art to well known techniques in the literature for particular

examples of carbon nanotube synthesis (*See* e.g., specification, e.g., at paras. [0022]-[0024]). Thus, the synthesis of substrate attached carbon nanotubes on a catalyst nanoparticle with non-random distribution of the nanotubes on the substrate would not involve undue experimentation.

18. In summary, it is my opinion that a person of ordinary skill in the art would understand that the inventors of the present claims were in possession of the claimed methods for producing patterned arrays of carbon nanotubes on a substrate, wherein the distribution of the nanotubes is controlled by the prior attachment of catalyst nanoparticles to the substrate, and wherein the catalyst nanoparticles are directed to and attached to the substrate through their attachment to biomolecules which are aligned with the substrate. This understanding would be based on reading the specification of the '141 application and an ordinary awareness and knowledge of those skilled in the art concerning routine methods of (1) attachment of catalyst nanoparticles, e.g., proteins containing metal ions to biomolecules (2) molecular alignment with and attachment of biomolecules to a substrate, (3) removal of the biomolecule and conversion of, e.g., metal-containing proteins to metal oxides with, for example, high temperatures; and (4) growth of carbon nanotubes on a substrate using catalyst nanoparticles and e.g., CVD techniques. Furthermore, I declare based on the aforementioned statements, that the specification enables one of ordinary skill in the art to make and use the invention embodied by the currently amended claims without undue experimentation.

19. I further declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements are made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under § 1001 of Title 18 of the United States Code,

and that such willful false statements may jeopardize the validity of the instant application or any patent issued thereupon.

Oct 17, 2007
Dated

Kai Wu, Ph.D.

EXHIBIT A

CURRICULUM VITAE

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Professional Profile

Senior scientist highly experienced in research and product development with nucleic acid based technologies. Extensive expertise in developing research and diagnostic products, kit reagents, and associated instrumentation systems for gene expression, genotyping study, genomic analysis and infectious disease assays. Recognized for managing team and establish relationships necessary to develop and deliver products to the market that consistently meet customer expectations. Innovative, analytical, motivated with communication, organization and problem-solving skills.

Education:

1990	Ph.D. in Cell Biology and Genetics **Cornell University, Graduate School of Basic Medical Science, New York, N.Y. (Ph.D. Thesis: "Growth Hormone Fragments and Their Biological Activities; Thesis Adviser: Dr. Martin Sonenberg)**
1983	B.A. in Chemistry **New York University, New York, N.Y.** **Fu Dan University, Shanghai, China (1997-1980)**

Professional Experience

Intel Corp., Santa Clara, CA

The goal of Intel's research in the biomedical area is to combine Intel's nanotechnologies with aspects of biology and medicine to make it possible to use chips in fundamentally new ways. Intel seeks to create fundamental advances in sensor technology, and to work together with the medical community to make it possible to use chips to diagnose disease and improve people's health.

➢ ***Senior Researcher: 12/2005 – present***

As the senior researcher in Biomedical and Life science group within Digital Health Group and then in Integrated Biosystems Laboratory within Intel Research, participated the path-finding activity to establish nucleic acid based platform for biomedical applications, responsible for new technology exploration, invention and evaluation as well as contributing to marketing research to identify possible applications and technologies.

Key Achievements

- Organized research proposals for nucleic acid based applications;
- Developed method for detecting DNA methylation pattern by SERS;

- Formulated n-BMA platform (a magnetic-nano reagent based diagnostic assay platform) concept and feasibility design
- Contributed to IP development (four patents filed or in preparation)
- Completed detailed technical and application assessment reports for marketing group

Affymetrix Inc., Santa Clara, CA

Affymetrix, Inc., a leader in DNA microarray technology, engages in the development, manufacture, sale, and servicing of systems for genetic analysis for use in the life sciences and in clinical diagnostics.

- ***Senior Scientist:*** **02/2004 – 12/2005**
  Staff Scientist II: **04/1997 – 01/2004**

Led team for designing and developing commercial products, responsible for technical development, evaluation and integration; collaboration with both academic and commercial research groups for co-development projects; coordination with research, marketing, QC/QA, manufacture, materials and technical supporting teams within the organization for product lunch. Managed collaboration projects and participated in marketing survey.

Key Achievements

- Managed Genechip® HIV PRT Plus array project from initiation stage to product lunch, including the array content design review, assay design and implementation, multiple testing arrays and commercial array design, validation study with clinical samples, field test design and coordination, array and reagent stability study, QC test methods design and implementation, documentation, technical training, and other manufacture transfer activities. Continued to guide technical support and participated in collaborations (with Roche and bioMerieux).
- Managed Genechip® E. coli Genome array assay project. Developed ribosomal RNA removal assay, implemented and integrated prokaryotic direct RNA labeling assay, designed and completed validation and stability study, QC test methods, and assisted marketing related activities.
- Managed Genechip® P. aeruginosa Genome Array project. Coordinated array design with Cystic Fibrosis Foundation (CFF), developed and implemented prokaryotic cDNA labeling assay, designed and implemented the validation study, supervising the training of extramural researchers from CFF and collaboration.
- Co-managed Human Genome U133 and Test 3 array validation studies, established and tested exogenous human expression spikes in Latin-square test for Human Genome U133 array sensitivity and specificity, designed and tested prokaryotic controls for Test 3 array validation study.
- Managed T7 Promoter Primer Kit project, designed and implemented QC methods for in-coming material and reagent manufacture, validation and stability studies, prepared documentations and marketing related materials.

- Developed the first generation of Globin Reduction Protocol, designed and implemented validation study, led on technical training, generating technical note.
- Co-developed second generation of Globin Reduction Protocol with Qiagen and managed the Globin Reduction RNA control kit project. Coordinated with the collaborator on various phases of the project, designed and completed validation study, design and implemented QC methods and specifications, co-managed trainings for technical support, QC and marketing groups.
- Co-managed the collaboration with Sloan-Kettering Cancer Center for detection of copy number aberrations in tumor cells by expression microarray. Developed and validated whole genome hybridization protocol with cell lines with aneuploidy. Detection of copy number aberration in GIST tumor samples.
- Managed technology evaluation projects for sample labeling, amplification, array hybridization enhancement, enzymology and target quantitation technologies.
- Performed international marketing roadshow along with our corporate service provider in China as the speaker for Affymetrix SNP products and new Affymetrix microarray products.

Biotronics Corporation, Lowell, MA

A start up Biotech Company by three scientists, developed into a company with one million dollar total revenue in sales by 1995 with a complete PCR diagnostic product line that includes reagent kits, sample preparation kit, amplification, detection instruments and software for infectious, genetics diseases and industry applications. Managed a subsidiary clinical diagnostic lab in Taiwan to provide services in prenatal, genetic and infectious disease diagnostics and served as the trial site for the launch of new products. Biotronics Corporation had also provided customized detection systems for its customers and distributors in USA, EU, Africa and Asia.

➢ ***Senior Scientist:*** **1990 – 1996**

Key Achievements

- As an inventor, developed AmpliSensor Technology, a fluorescence energy-transfer based PCR quantitation method.
- Developed the Universal AmpliSensor Kit: a ligation-based method for constructing user-defined detection primers.
- Developed human pathogens qualitative and quantitative AmpliSensor Kits (including CMV, HBV, HIV-1, HGV, Salmonella, TB and Chlamydia detection).
- Established a screening assay system for transgenic shrimp (viral resistant strain) and veterinary (avian) pathogen detection.
- Developed quantitative PCR assay systems for the detection of genetic diseases (such as Trisomy 21 detection and Fragile-X carrier status determination) and clinical cancer research (such as LOH and MRD detection).
- Developed geno-typing assay kits (DRB-1, Y repeat sequence in maternal blood and HCV geno-typing).

- Directed technical support, technical training and sale demo for international and US distributors.
- Planning and preparation for patent application, grant application and product regulatory approval applications.
- Managed Software design and development for data acquisition and quantitative analysis (AmpliSensor Analysis Program, ASAP);
- Helped to establish the global sales network through designated distributors.
- Assisted the training and supervising the operation of a clinical diagnostic service lab in Taiwan; generated revenue to support the R&D effort at the early stage of the Company.

Grants and Awards

Principle Investigator, STTR NIH grant, 1996, 1 R41 CA72272-01 title "Genetic and Oncologic Gene Copy Number Changes".

Patents (Published and Granted)

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2. Tadakamalla, RP.; Wu, Kai 2006 Methods for Identifying DNA copy number changes. (pending) (PUB. APP. NO, 20060194243).
3. Wu, Kai; Miyada, Charles G; Nguyen, Thong. 2006 Method for fragmenting nucleic acids. (pending) (PUB. APP. NO, 20060141498)
4. Salceda, Susana; Wu, Kai; Briones, Natalia; Bai, Qing; Cao, Yanxiang. 2004 Methods of small sample amplification. (pending) (PUB. APP. NO, 20050003392).
5. Christians, Frederick C.; Mei, Rui; Wu, Kai; Miyada, Charles G. 2003 Method for depleting specific nucleic acids from a mixture . (pending) (PUB. APP. NO, 20050003369).
6. Christians, Fred C.; Do, Duc; Gingeras, Thomas; Gunderson, Kevin; Miyada, Charles G.; Rosenow, Carsten; Wu, Kai; Yang, Qing 2003 Preparation of nucleic acid samples. U.S. Patent No. 6,613,516.
7. Wang, C.N. and Wu, K.Y. 1998 Kits for detecting a target nucleic acid with blocking oligonucleotides. U.S. Patent No. 5,712,386.
8. Wang, C.N. and Wu, K.Y. 1993 A homogeneous detection process for various *in vitro* nucleic acid amplification methods. U.S. Patent No. 5,567,583.
9. Wang, C.N. and Wu, K.Y. 1991 A homogeneous process for nucleic acid amplification and detection and products related thereto. U.S. Patent No. 5,348,853.

Publications

1. Wolfgang, Matthew C; Kulasekara, Bridget R; Liang, Xiaoyou; Boyd, Dana; Wu, Kai; Yang, Qing; Miyada, C Garrett; Lory, S. (2003) Conservation of genome content and virulence determinants among clinical and environmental isolates of Pseudomonas aeruginosa. Proc. *Natl. Acad.. Sci. USA* **100:** 8484-8489.
2. Chen, S., Xu, R., Yee, A., Wu, K.Y. , Wang, C.N., Read, S. and DeGrandis, S. (1998) An automated fluorescent PCR method for detection of Shiga toxin- producing Escherichia coli in foods. *J. Appl. Environ. Microbiol.* **64:** 4210-4216.

3. Chen, S., Yee, A. Griffiths, M., Wu, K.Y., Wang, C.N., Rahn, K. and DeGrandis, S. (1997) A rapid, sensitive and automated method for detection of *Salmonella* species in foods using AG-9600 AmpliSensor Analyzer. *J. Appl. Bacteriol.* **83:** 314-321.
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5. Wang, C.N., Wu, K.Y. and Wang H.-T. (1995) Quantitative PCR using the AmpliSensor Assay. In *PCR Primer: A Laboratory Manual, Cold Spring Harbor Laboratory Press,* Cold Spring Harbor, New York, pp. 193-202.
6. Chiang, P.W., Song, W.J., Wu, K.Y., Korenberg, J.R., Fogel, E.J., Van Keuren, M.L., Lashkari, D. and Kurnit, D. (1996) Use of a fluorescent-PCR reaction to detect genomic sequence copy number and transcriptional abundance. *Genomic Research* **6:** 1013-1026.
7. Sonenberg M, Guller S, Wu KY, Corin RE and Allen DL. (1994) Activity of growth hormone peptides bGH 96-133 and hGH 95-133 in 3T3-F442A cells. *Mol Cell Endocrinol.* 99(2):193-9.
8. Guller S, Corin RE, Wu KY, Sonenberg M. (1991) Up-regulation of vinculin expression in 3T3 preadipose cells by growth hormone. *Endocrinology.* 129(1):527-33.
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10. Guller S, Corin RE, Wu KY, Sonenberg M. (1989) Growth hormone-induced alteration of morphology and tubulin expression in 3T3 preadipose cells. *Biochem Biophys Res Commun.* 163(2):895-901.
11. Guller S, Sonenberg M, Wu KY, Szabo P, Corin RE. (1989) Growth hormone-dependent events in the adipose differentiation of 3T3-F442A fibroblasts: modulation of macromolecular synthesis. *Endocrinology.* 125(5):2360-7.

Presentations:

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Kai Y. Wu, Q. Yang, D. Johnston, G. Miyada, T. Ryder, P Kaplan. (1998) Development of a new DNA-array based GeneChip assay for HIV genotyping. 12th International AIDS Conference (Geneva, Switzerland) Abstract No. 42196.

Kai Y. Wu, Speaker for Second Annual Gene Quantification Conference, titled "AmpliSensor Assay for Genetic Diseases and Cancer", 1996, Coronado, California.

Kai Y. Wu, Speaker for Gene Quantification Conference, titled "AmpliSensor Assay: a Fluorescence Energy-Transfer based Homogeneous Assay for High-Resolution PCR Quantitation." 1995, San Diego, California.

Wu KY, Lee CH, Chong, SKF, Fitzgerald JF, Wang H-T, Wang CNJ. (1992): A DNA-based, homogeneous assay for CMV detection. Abstract #117, Program, AAAS Science Innovation '92, new techniques and instruments in biomedical research, San Francisco, July 21-25, 1992. pp. 99.